



## Datasheet

# RS PRO Sub-Miniature Pushbutton Switches

Stock number: **175-XXXX (Details as follows)**

EN



The picture above is for reference only.

### Specifications:

RATING : 2A/36VDC

ELECTRICAL LIFE : 200,000 make-and-break cycles at full load

MECHANICAL LIFE : 1,000,000 cycles

INSULATION RESISTANCE : 1,000 M $\Omega$  min. at 500VDC

DIELECTRIC STRENGTH : 2,000V RMS @ sea level

CONTACT RESISTANCE : 50 m $\Omega$  max.

OPERATION TEMPERATURE : -20°C~+70°C

TRAVEL: About 2.0 $\pm$ 0.20mm

OPERATION PRESSURE : 4.5N $\pm$ 1.5N

INGRESS PROTECTION : IP67

TORQUE : 11.5 kgf · cm

THICKNESS : 8.0mm (Max.)

Current limiting resistor is required to limit LED forward current to 20mA.

**RS Part no.**

175-8480	MPB16-CARE-0-JR-0V
175-8550	MPB16-CARE-1-JR-0V
175-8546	MPB16-CARE-1-JR-6V
175-8549	MPB16-CARE-1-JR-12V
175-8548	MPB16-CARE-1-JR-24V
175-8538	MPB16-CARE-3-JR-0V
175-8553	MPB16-CARE-3-JR-3V
175-8532	MPB16-CARE-3-JR-6V
175-8516	MPB16-CARE-3-JR-12V
175-8534	MPB16-CARE-3-JR-24V
175-8523	MPB16-CARE-5-JR-0V
175-8573	MPB16-CARE-5-JR-3V
175-8533	MPB16-CARE-5-JR-6V
175-8522	MPB16-CARE-5-JR-12V
175-8519	MPB16-CARE-5-JR-24V
175-8585	MPB16-CARE-6-JR-0V
175-8580	MPB16-CARE-6-JR-6V
175-8583	MPB16-CARE-6-JR-12V
175-8582	MPB16-CARE-6-JR-24V
175-8594	MPB16-CARE-7-JR-0V
175-8568	MPB16-CARE-7-JR-6V
175-8572	MPB16-CARE-7-JR-12V
175-8571	MPB16-CARE-7-JR-24V
175-8560	MPB16-CARE-A-JR-0V
175-8499	MPB16-CARE-A-JR-6V
175-8559	MPB16-CARE-A-JR-12V
175-8556	MPB16-CARE-A-JR-24V
175-8470	MPB16-CARE-RGB-JR-0V
175-8465	MPB16-CARE-RGB-JR-6V
175-8468	MPB16-CARE-RGB-JR-12V
175-8467	MPB16-CARE-RGB-JR-24V
175-8457	MPB16-CARP-0-JR-0V
175-8454	MPB16-CARP-1-JR-0V

175-8450	MPB16-CARP-1-JR-6V
175-8453	MPB16-CARP-1-JR-12V
175-8452	MPB16-CARP-1-JR-24V
175-8443	MPB16-CARP-3-JR-0V
175-8459	MPB16-CARP-3-JR-3V
175-8514	MPB16-CARP-3-JR-6V
175-8496	MPB16-CARP-3-JR-12V
175-8456	MPB16-CARP-3-JR-24V
175-8504	MPB16-CARP-5-JR-0V
175-8500	MPB16-CARP-5-JR-3V
175-8478	MPB16-CARP-5-JR-6V
175-8503	MPB16-CARP-5-JR-12V
175-8502	MPB16-CARP-5-JR-24V
175-8490	MPB16-CARP-6-JR-0V
175-8484	MPB16-CARP-6-JR-6V
175-8488	MPB16-CARP-6-JR-12V
175-8487	MPB16-CARP-6-JR-24V
175-8576	MPB16-CARP-7-JR-0V
175-8731	MPB16-CARP-7-JR-6V
175-8735	MPB16-CARP-7-JR-12V
175-8734	MPB16-CARP-7-JR-24V
175-8721, 175-9439	MPB16-CARP-A-JR-0V
175-8688	MPB16-CARP-A-JR-6V
175-8720	MPB16-CARP-A-JR-12V
175-8717	MPB16-CARP-A-JR-24V
175-8704	MPB16-CARP-RGB-JR-0V
175-8703	MPB16-CARP-RGB-JR-6V
175-9121	MPB16-CARP-RGB-JR-12V
175-9159	MPB16-CARP-RGB-JR-24V
175-9183	MPB16-A1HE-0-JR-0V
175-9182	MPB16-A1HE-1-JR-0V
175-9181	MPB16-A1HE-3-JR-0V
175-9180	MPB16-A1HE-5-JR-0V
175-9178	MPB16-A1HE-6-JR-0V
175-9177	MPB16-A1HE-7-JR-0V

175-9176	MPB16-A1HE-A-JR-0V
175-9213	MPB16-A1HE-RGB-JR-0V
175-9192	MPB16-A1FP-0-JR-0V
175-9190	MPB16-A1FP-1-JR-0V
175-9189	MPB16-A1FP-3-JR-0V
175-9174	MPB16-A1FP-5-JR-0V
175-9187	MPB16-A1FP-6-JR-0V
175-9200	MPB16-A1FP-7-JR-0V
175-9185	MPB16-A1FP-A-JR-0V
175-9184	MPB16-A1FP-RGB-JR-0V
175-9148	MPB16-A1FE-0-JR-0V
175-9199	MPB16-A1FE-1-JR-0V
175-9198	MPB16-A1FE-3-JR-0V
175-9197	MPB16-A1FE-5-JR-0V
175-9196	MPB16-A1FE-6-JR-0V
175-9195	MPB16-A1FE-7-JR-0V
175-9194	MPB16-A1FE-A-JR-0V
175-9193	MPB16-A1FE-RGB-JR-0V
175-9211	MPB16-A2HE-0-JR-0V
175-9210	MPB16-A2HE-1-JR-0V
175-9209	MPB16-A2HE-3-JR-0V
175-9207	MPB16-A2HE-5-JR-0V
175-9206	MPB16-A2HE-6-JR-0V
175-9205	MPB16-A2HE-7-JR-0V
175-9204	MPB16-A2HE-A-JR-0V
175-9203	MPB16-A2HE-RGB-JR-0V
175-9221	MPB16-A2FP-0-JR-0V
175-9219	MPB16-A2FP-1-JR-0V
175-9218	MPB16-A2FP-3-JR-0V
175-9217	MPB16-A2FP-5-JR-0V
175-9201	MPB16-A2FP-6-JR-0V
175-9215	MPB16-A2FP-7-JR-0V
175-9228	MPB16-A2FP-A-JR-0V
175-9212	MPB16-A2FP-RGB-JR-0V
175-9186	MPB16-A2FE-0-JR-0V

175-9188	MPB16-A2FE-1-JR-0V
175-9227	MPB16-A2FE-3-JR-0V
175-9226	MPB16-A2FE-5-JR-0V
175-9225	MPB16-A2FE-6-JR-0V
175-9224	MPB16-A2FE-7-JR-0V
175-9223	MPB16-A2FE-A-JR-0V
175-9222	MPB16-A2FE-RGB-JR-0V
175-9130	MPB16-A3HE-0-JR-0V
175-9128	MPB16-A3HE-1-JR-0V
175-9127	MPB16-A3HE-3-JR-0V
175-9126	MPB16-A3HE-5-JR-0V
175-9125	MPB16-A3HE-6-JR-0V
175-9124	MPB16-A3HE-7-JR-0V
175-9123	MPB16-A3HE-A-JR-0V
175-9122	MPB16-A3HE-RGB-JR-0V
175-9139	MPB16-A3FP-0-JR-0V
175-9138	MPB16-A3FP-1-JR-0V
175-9137	MPB16-A3FP-3-JR-0V
175-9136	MPB16-A3FP-5-JR-0V
175-9134	MPB16-A3FP-6-JR-0V
175-9119	MPB16-A3FP-7-JR-0V
175-9132	MPB16-A3FP-A-JR-0V
175-9146	MPB16-A3FP-RGB-JR-0V
175-9202	MPB16-A3FE-0-JR-0V
175-9161	MPB16-A3FE-1-JR-0V
175-9120	MPB16-A3FE-3-JR-0V
175-9175-	MPB16-A3FE-5-JR-0V
175-9144	MPB16-A3FE-6-JR-0V
175-9143	MPB16-A3FE-7-JR-0V
175-9142	MPB16-A3FE-A-JR-0V
175-9140	MPB16-A3FE-RGB-JR-0V

## Specifications:

### 1. Style :

This specification describes “Metal Pushbutton Switch ” , mainly used as signal switch of electric devices, with the general requirements of mechanical and electrical characteristic.

- ①Switch combination : Off-Mom. Single Pole
- ②Enclosure material : Aluminum alloy / Stainless steel.
- ③Operating Type : Momentary.
- ④Operating Temperature Range : -20 °C~+70 °C.
- ⑤Degrees of protection provided by enclosures  
IP code: IP67.

**2. Electrical Rating :** 2A /36VDC (resistive load).

**3. Type of Actuation :** Pushbutton Switch.

### 4. Test Sequence :

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
APPEARANCE	1	Visual Examination	By Visual Examination check without and out pressure & testing.	There shall be no defects that affect the serviceability of the product.
ELECTRIC PERFORMANCE	2	Contact Resistance	To be measured between the two terminals associated with each switch pole.	50mΩ Max.
	3	Insulation Resistance	Measurements shall be made following application of 500 VDC / 100mA potential across terminals and cover for 1 minute.	1000MΩ/500VDC min.
	4	Dielectric Withstanding Voltage	2000VAC(50Hz or 60Hz)/ between terminals /1minute.	There shall be no breakdown or flashover.

Apr.27.2017

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
MECHANICAL PERFORMANCE	5	Operation pressure	MODEL-1305N MECHANICAL TEST 500gram · 1000gram · 2000gram.	4.5N±1.5N
	6	Operation Travel	Full Travel.	2.0mm±0.20
	7	Torque	Applied to nut.	11.5kgf · cm.
	8	Panel Thickness	Applied to nut.	8.0mm MAX.
OPERATING LIFE	9	Operating Life	<p>Measurements shall be made following the test forth below :</p> <p>① 2A / 36VDC.( resistive load)</p> <p>② Electronics Life Test : 200,000 cycles.</p> <p>③ Rate of Operation : 6-8 operation cycles per minute.</p> <p>④ Operating force:8N (MAX).</p>	<p>ⓄDielectric Strength : between terminals :1000VAC.</p> <p>ⓄInsulation Resistance : 1000MΩ (at 500VDC)min.</p> <p>ⓄContact Resistance : 150mΩ Max.</p>
			<p>① Mechanical Life Test : Resettable : 1,000,000 cycles.</p> <p>② Operating force:8N (MAX).</p>	<p>ⓄOperation pressure: 3N±1.5N (for Mechanical Life Test).</p>

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	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
HUMIDITY RESISTANCE	10	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $-20\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.
	11	Resistance High Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $70\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.
	12	Resistance Humidity	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature: $40\pm 2^{\circ}\text{C}$ ② Relative Humidity: 90~95% ③ Time: 96 hours.	① Contact Resistance: 100 m $\Omega$ Max.  ② Insulation Resistance: 1000M $\Omega$ min.



	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
HUMIDITY RESISTANCE	13	Salt spray Testing	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: ①Temperature:35±2°C. ②The ratio of salt-water : 5%. ③The spray amount of salt- water : 1~2 ml/h. ④Time:48 hours.	The testing standard based on bubble, crack, And magnifying glass with gauge.
	14	Test of IP 67	Protected against the effects of Temporary immersion in water. (1m below the surface of the water for a duration of 30 min).	IP67 According to EN 60529 : 1991 + A1 : 2000 IEC 60529 : 2001
RoHS	15	HSF	Refer RoHS Standard : The electronic electrical machinery product limits with six big chemical materials.	Cd : 100ppm Pb : 1000ppm Hg : 1000ppm Cr6+ : 1000ppm PBB、PBDE : 1000ppm
SOLDER HEAT RESISTANCE	16	Manual Soldering	■ hand Soldering : ①Soldering Temperature : 280°C. ②Duration of Solder Heated : 3 seconds (Max). ■ Precautions in Handling: ③Please make sure that there is no flux rose over the surface of the PCB.	①Shall be free from pronounced backlash and falling-off or breakage terminals.  ②As shown in item 2-4.

Wiring:

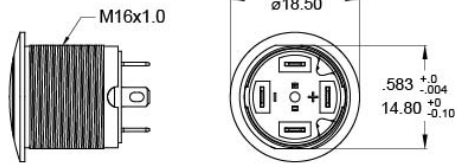
1. Solder the terminals using a 60W soldering iron at 280°C within 3 seconds. (Sn-Ag-Cu type solder is recommended.)
2. When soldering, be sure to keep the soldering iron as far away from the housing as possible.
3. Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.

## 5. LED Specifications : (LED Without resistor)

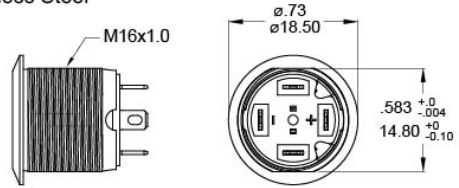
Color	VF(v) Min.	VF(v) MAX.	IF(Typ. )
White	2.8	3.7	20mA
Red	1.7	2.5	20mA
yellow	1.7	2.5	20mA
Blue	2.8	3.7	20mA
Green	2.8	3.7	20mA
Orange (Amber)	1.7	2.5	20mA

## BODY TYPE

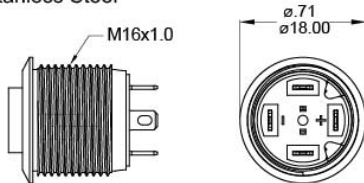
CA/CB Aluminum alloy



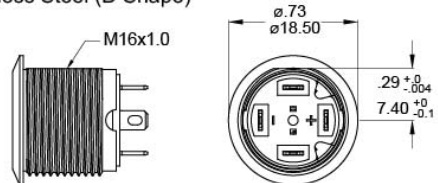
A1 Stainless Steel



A2 Stainless Steel



A3 Stainless Steel (D Shape)

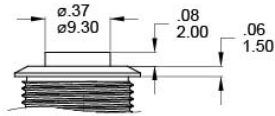


## BUTTON TYPE

R Round Button



H High Button

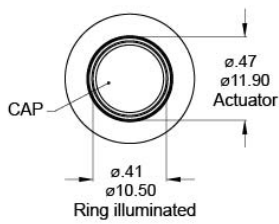


F Flat Button

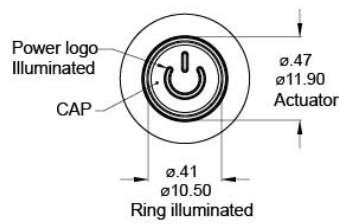


## LIGHT TYPE

E Ring, Round

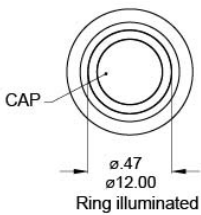


P Power logo, Round

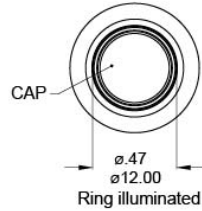


\* E,P light type only for CA,CB body.  
\* HE,FE,FP light type only for A1,A2,A3 body.

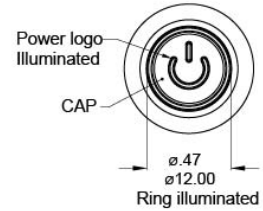
HE Ring, High

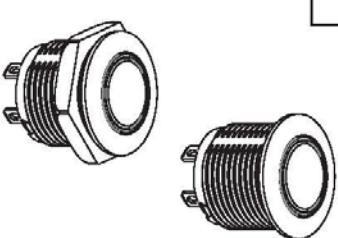
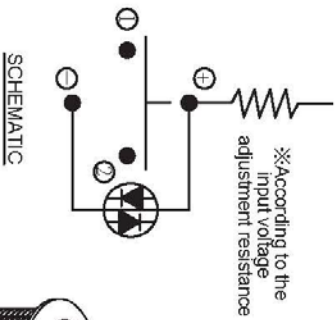
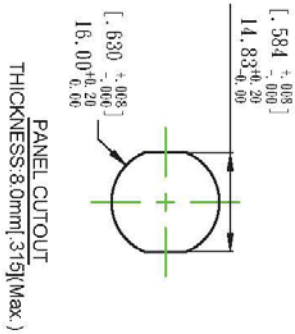
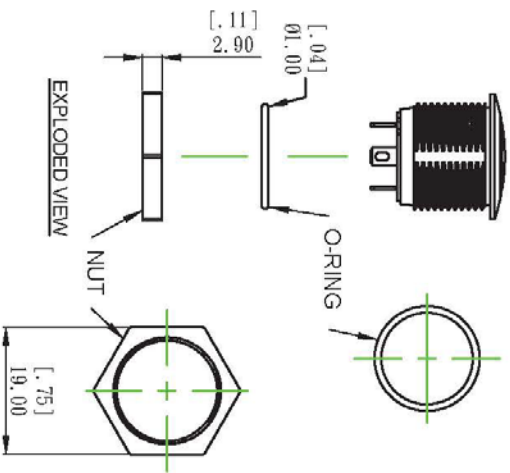
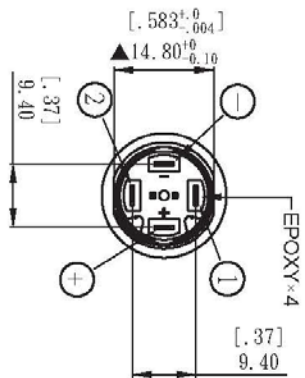
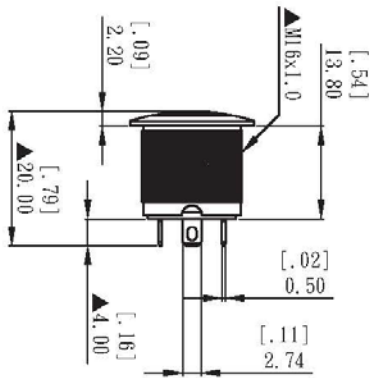
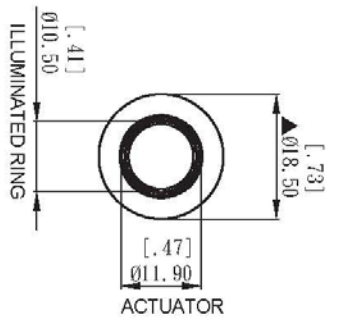


FE Ring, Flat



FP Power logo, Flat





**MATERIAL**  
 Bushing: Aluminum alloy.  
 Base: PBT(UL-94V0).  
 Actuator: PC(Translucent UL-94V2).  
 Cap: Aluminum alloy.  
 Spring: Steel.  
 Sealing: Silicone(Translucent).  
 O-ring: Silicone(Translucent).  
 Nut: Brass(Nickel Plated).  
 Terminal: Brass, Gold flash plated.  
 Contact: Silver alloy.

ASSEMBLED VIEW

## MPB16-XXRE-X-XR-XV

Body type & color	Al alloy	CA	Natural Anodized	Al alloy	CB	Black Anodized
Button type	R	Round	E	Ring		
Light type						
LED color	1	White	3	Red	5	Yellow
			6	Green	7	Blue
Terminal plating	R	Gold Flash	J	Solder terminal	T1	Wire length 500mm

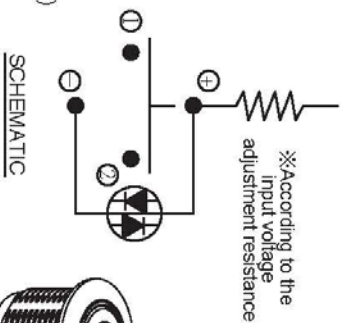
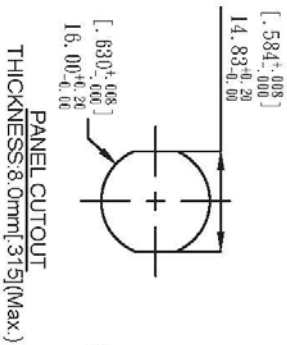
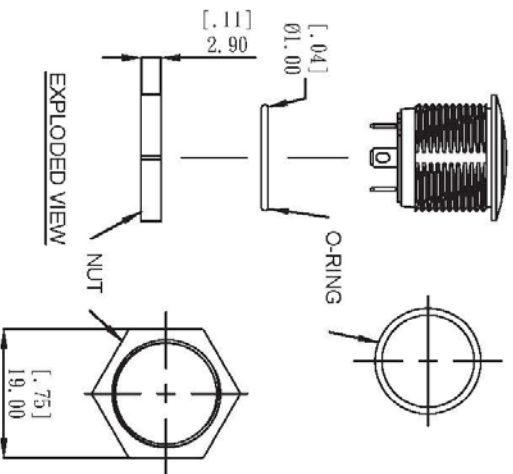
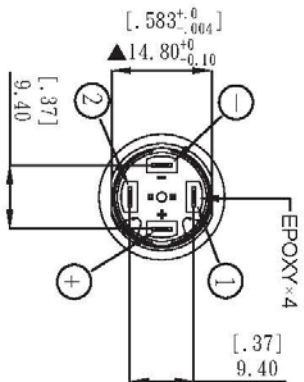
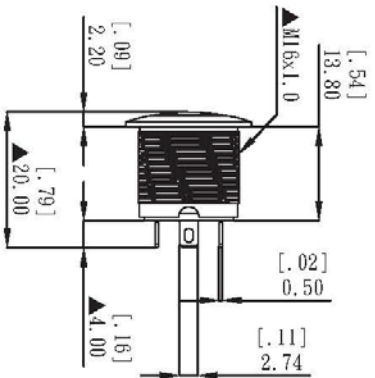
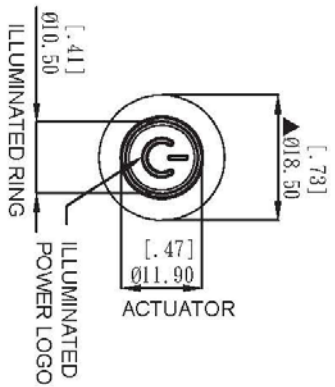
Accessories	Resistance (About LED Voltage)	0	Without Resistance	3V	LED Input 3 VDC, 47Ω	6V	LED Input 6 VDC, 160Ω	12V	LED Input 12 VDC, 470Ω	24V	LED Input 24 VDC, 1000Ω
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※ Red/Yellow led type only  
 ※ ohms value of resistance tolerance: ±5%

### Specifications

- Rating: 2A/36VDC.
- Electrical Life: 200,000 Make-And-Break Cycles  
 At Full Load
- Mechanical Life: 1,000,000 Cycles.
- Insulation Resistance: 1,000MΩ Min. at 500VDC.
- Dielectric Strength: 2,000V RMS@sea level.
- Contact Resistance: 50 mΩ Max.
- Operation Temperature: -20°C~+70°C.
- Travel: About 2.0mm±0.20mm
- Operation Pressure: 4.5N±1.5N.
- Ingress Protection: IP67.
- Torque: 11.5 kgf. cm.
- Current limiting resistor is required to limit LED forward current to 20mA.

**TOLERANCE (公差):**  
 0.00 mm ± 0.25mm  
 0.0 mm ± 0.40mm  
 ANGULAR: ±5°



**MATERIAL**  
 Bushing : Aluminum alloy.  
 Base : PBT(UL-94V0).  
 Actuator : PC(Translucent UL-94V2).  
 Cap : Aluminum alloy.  
 Spring : Steel.  
 Sealing : Silicone(Translucent).  
 O-ring : Silicone(Translucent).  
 Nut: Brass(Nickel Plated).  
 Terminal: Brass,Gold Flash Plated.  
 Contact : Silver alloy.

**ASSEMBLED VIEW**

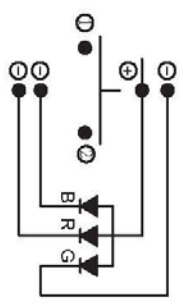
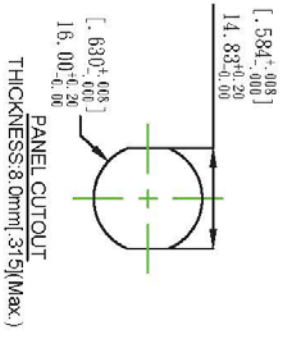
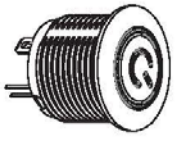
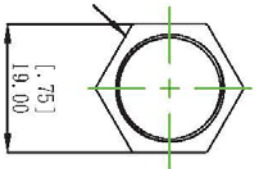
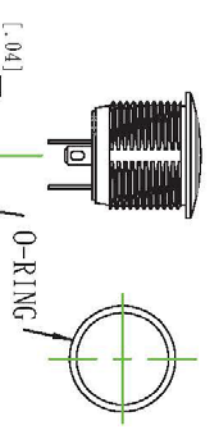
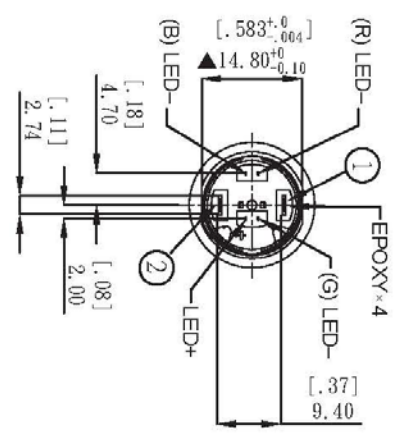
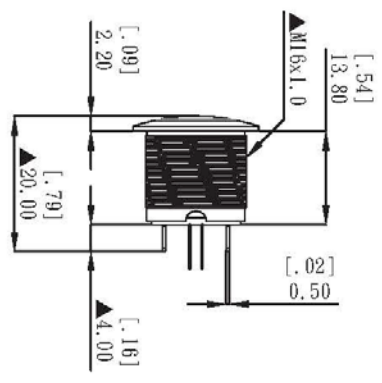
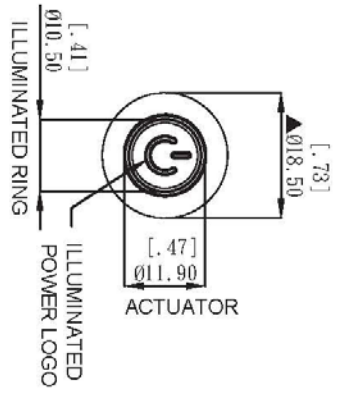
## MPB16-XXRP-X-XR-XV

Body type & color		Accessories	
CA	Al alloy Neutral Anodized	Resistance (about LED Voltage)	Without
CB	Al alloy Black Anodized	Resistance	
Button type		3V	LED input 3 VDC 470
R: Round		6V	LED input 6 VDC 180Ω
P: Power Logo		12V	LED input 12 VDC 470Ω
LED color		24V	LED input 24 VDC 1000Ω
1	White	※ ohms value of resistance tolerance: ±5%	
3	Red	Terminal plating	
5	Yellow	R	Gold Flash
6	Green	J	Solder terminal
7	Blue	T1	Wire length 500mm

### Specifications :

- Rating : 2A/36VDC.
- Electrical Life : 200,000 Make-And-Break Cycles  
At Full Load.
- Mechanical Life : 1,000,000 Cycles.
- Insulation Resistance : 1,000MΩ Min. at 500VDC.
- Dielectric Strength : 2,000V RMS@sea level.
- Contact Resistance : <math>50m\Omega</math>Max.
- Operation Temperature : -20°C~+70°C.
- Travel : About 2.0mm±0.20mm.
- Operation Pressure : 4.5N±1.5N.
- Ingress Protection : IP67.
- Torque : 11.5 kgf · cm.
- Current limiting resistor is required to limit LED forward current to 20mA.

**TOLERANCE (公差) :**  
 0.00 mm ± 0.25mm  
 0.0 mm ± 0.40mm  
 ANGULAR: ±5°



**MATERIAL**  
 Bushing : Aluminum alloy.  
 Base :PBT(UL-94V0).  
 Actuator : PC(Translucent UL-94V2).  
 Cap : Aluminum alloy.  
 Spring : Steel.  
 Sealing : Silicone(Translucent).  
 O-ring : Silicone(Translucent).  
 Nut : Brass(Nickel Plated).  
 Terminal :Brass,Gold flash plated.  
 Contact :Silver alloy.

### MPB16-XXRP-X-XR-0V

Body type & color	Al alloy Natural Anodized
CA	Al alloy Black Anodized
Button type	Round
Light type	Power Logo
LED color	RED/GREEN/BLUE
Accessories	Resistance (About LED Voltage) 0 Without Resistance 3V LED Input 3 VDC,47Ω 6V LED Input 6 VDC,180Ω 12V LED Input 12 VDC,470Ω 24V LED Input 24 VDC,1000Ω ※ ohms value of resistance tolerance: ±5%
Terminal plating	Gold flash
Terminal Shape	J Solder terminal T1 Wire length 500mm

- Specifications:**
- Rating : 2A/36VDC.
  - Electrical Life : 200,000 Make-And-Break Cycles  
At Full Load.
  - Mechanical Life : 1,000,000 Cycles.
  - Insulation Resistance : 1,000MΩ Min. at 500VDC.
  - Dielectric Strength : 2,000V RMS@sea level.
  - Contact Resistance : 50mΩMax.
  - Operation Temperature : -20°C~+70°C.
  - Travel : About 2.0mm±0.20mm.
  - Operation Pressure : 4.5N±1.5N.
  - Ingress Protection : IP67.
  - Torque : 11.5 kgf · cm.
  - Current limiting resistor is required to limit LED forward current to 20mA.
- TOLERANCE (公差):**  
 0.00 mm ± 0.25mm  
 0.0 mm ± 0.40mm  
 ANGULAR: ±5°